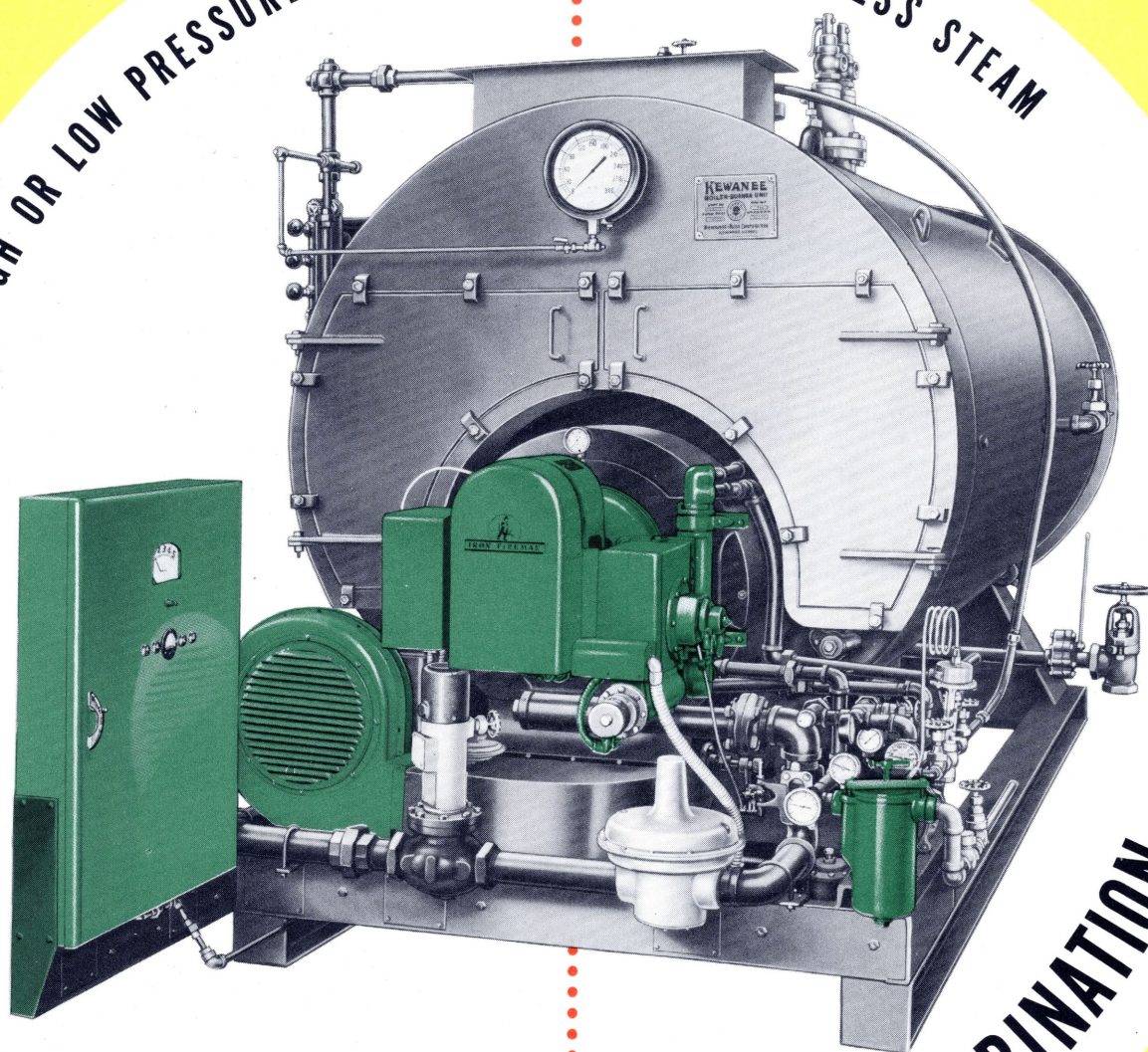


The KEWANEE-IRON FIREMAN BOILER-BURNER UNIT

FOR HIGH OR LOW PRESSURE HEATING, POWER AND PROCESS STEAM



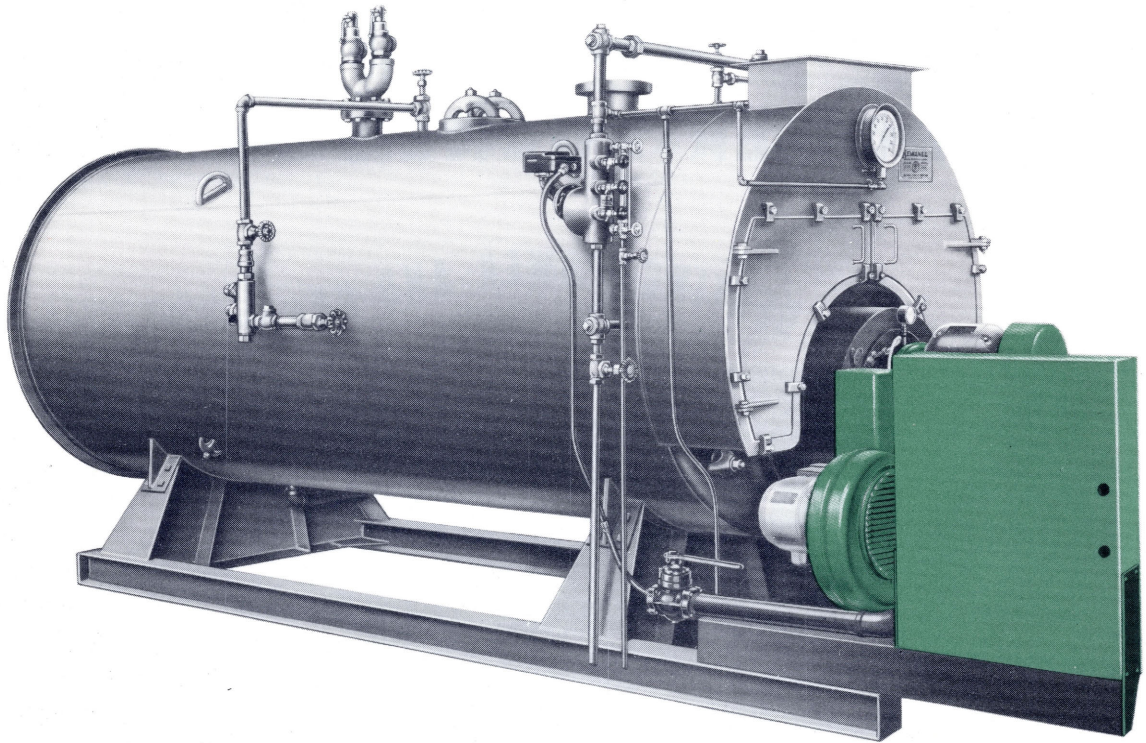
OIL, GAS OR OIL-GAS COMBINATION

Iron Fireman Manufacturing Company
CLEVELAND, OHIO



Kewanee-Ross Corporation
KEWANEE, ILLINOIS

A COMPLETELY INTEGRATED AND



FOR HIGH AND LOW PRESSURE STEAM and for Hot Water Heating

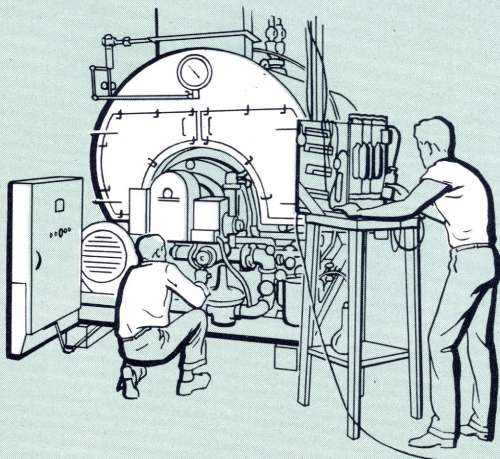
Here finally is a Boiler-Burner Unit so completely integrated and so accurately engineered that steam is produced with new "highs" in efficiency . . . yet the entire operation is truly automatic in every respect. Set the controls, flip the switch and it's ready to go.

Although Boiler-Burner Units, (so called "package heat") have been known as such only during the past 25 years . . . when mechanical means of firing boilers reached toward perfection . . . the Kewanee-Iron Fireman Unit is actually the culmination of a century and a quarter of combined experience

in designing and building combustion and steam generating equipment of the finest type.

Since 1868 . . . some 84 years ago . . . Kewanee Boilers have been recognized as outstanding in their field, both from the standpoint of unusual durability and "top" efficiency in producing steam.

For 30 years Iron Fireman has been a pioneer and leader in the development and application of automatic firing equipment. Its products include equipment for firing oil, gas and coal, with "2-fuel" and "3-fuel" burners which can be quickly shifted from one fuel to another.



The Kewanee-Iron Fireman Boiler-Burner Unit has undergone gruelling tests . . . in the laboratories of both Kewanee and Iron Fireman.

The accessories, which are not manufactured by Kewanee or Iron Fireman, were chosen from names that lead in their respective fields, then tested in the complete unit to be certain that each and every part is a fitting "team-mate" for all the others. Only after many months of development and testing was this modern Boiler-Burner Unit placed on the market.

The boiler portion of the unit is completely assembled at Kewanee with all of its essential elements, mounted on substantial steel skids and shipped direct from Kewanee to the point of installation.

THOROUGHLY ENGINEERED UNIT



Every Part Accessible . Easy to Operate

For convenience the burner controls are housed in a single panel box. Boiler gauges can be seen at a glance and boiler controls easily reached. The burner is mounted on post hinges, and swings out, exposing the nozzle for easy cleaning. Access to the fire tubes for cleaning and inspection is but a matter of minutes, since hinged doors swing out on the front smoke box. Manhole and handholes are conveniently located for accessibility to the waterside of the boiler.

The Kewanee-Iron Fireman Boiler-Burner Unit is so easy to operate and service that its operation requires a minimum of the engineer's time . . . freeing him for other duties.

Here truly is efficiency in the generation of steam . . . a completely automatic unit which regularly operates at better

than par and meets, or exceeds, all the requirements of the A.S.M.E., S.B.I., and Underwriters Laboratories.

Maximum Efficiency through a Wide Range of Steam Production

Whether the demands for steam permit "loafing along," operation at normal rated capacities, or require overloads of 50% and more, the Kewanee-Iron Fireman Unit generates steam at top efficiency.

The burner's firing rate is automatically controlled to adjust itself according to the load, maintaining an even steam pressure under all conditions. The amount of steam needed is produced . . . no more, nor less. Guessing and chance are taken out of the production of steam by this modern unit.

The burner, including all controls, forced draft equipment and oil preheating system, is completely assembled, wired, and tested at the Iron Fireman factory. *Matching connections are provided* so that when this packaged assembly is shipped from the Iron Fireman Cleveland Plant and arrives on the job, it *can be easily connected to the boiler in a short time*. All refractories are integrally mounted at the factory, thus reducing to an absolute minimum the amount of field work required in placing this unit into service.

The Kewanee-Iron Fireman Units are designed for forced draft operation, eliminating the necessity of a high stack. Provision need only be made for a vent extending through the roof or outside of the building.

A Complete Range of Sizes for Every Commercial and Industrial Application

These boiler-burner units are available for high pressure steam in sizes with outputs ranging from 52 to 456 hp, 125 and 150 lb working pressure; also for low pressure 15 lb steam or 30 lb water, in sizes from 1,313,000 Btu to 10,200,000 Btu. They may be fired with No. 6 or lighter fuel oils, gas (either high pressure or as low as 2 oz), or a combination of both fuels. The line thus covers a wide variety of commercial and industrial applications for heating, power and process steam.

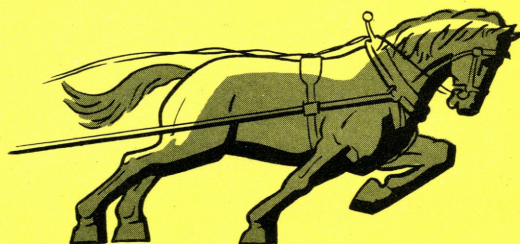
8.2 SQUARE FEET OF HEATING SURFACE

per Boiler Horsepower

WHY does the Kewanee-Iron Fireman Boiler-Burner Unit generally steam with such uniformly high efficiency even when pushed far beyond its rated capacity? Let's get down to a few important basic facts.

All steam generating equipment has two jobs. First, it must generate heat by burning the fuel. Then that heat must be transferred to the boiler water.

If insufficient heating surfaces are provided, too much heat is lost in the stack gases. That's why the Kewanee-Iron Fireman Unit is designed with 8.2 square feet of heating surface for each rated boiler horsepower. The 8.2 square feet of heating surface as used in rating the Kewanee-Iron Fireman Unit are in strict accordance with the time-tested and proved Code established by the Steel Boiler Institute.



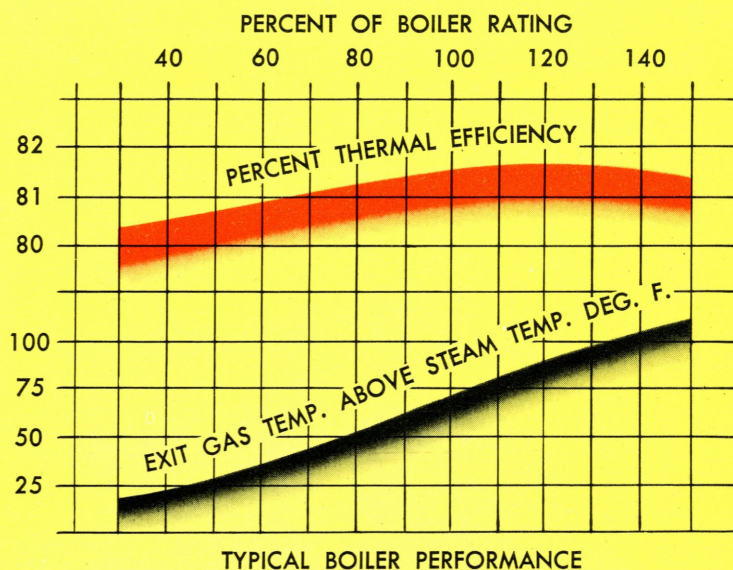
The so-called "critical length of tubes" . . . actually the proper proportioning of primary and secondary heating surfaces to the volume of water in the boiler . . . is a very important consideration in the design of the boiler. This correct proportioning comes only with many years of experience and continual testing to find out just what is right. Kewanee's 84 years of experience can't be matched by "guesswork."

80%
CERTIFIED EFFICIENCY

LOOK INSIDE the Kewanee-Iron Fireman Boiler-Burner Unit on the next page. The boiler water completely surrounds the long combustion chamber, bringing a greater volume of water into direct contact with the hottest parts of the furnace walls. This means more rapid heat transfer and faster steaming.

The generous size of the furnace has another advantage. It provides plenty of space in which the gases from the fuel can swirl and mix with the air . . . an important factor of complete combustion. The massive corrugations of the fire chamber's walls add strength and expose a greater volume of water where the heat is most intense.

The long travel of the gases through the boiler is a further factor in the overall efficiency of the boiler. The hot gases, formed by the burning fuel, travel a long, straight path . . . through the combustion chamber to the rear and into the fire tubes for the long run to the front, before reaching the



smoke box. Thus all usable heat is transferred to the water in the boiler. Spinner blades, extending two-thirds the length of the tubes, swirl the gases against tube walls and speed up the transfer of heat.

The chart above graphically tells the story of the unusual steam making abilities of the Kewanee-Iron Fireman Boiler-Burner Unit. The high CO_2 in the combustion gases represents efficient burning of the fuel, while the comparatively low temperature of the exit gases means that all the usable heat has been picked up by the boiler water.

And finally the story of efficiency is confirmed by performance tests by which the total amount of heat in the fuel (oil or gas) supplied by the burner and the amount of heat represented by the steam generated is carefully measured and converted into terms of overall operating efficiency.

SHELL, shaped from heavy flange steel, heads and furnace of fire-box quality. All welds in accordance with A.S.M.E. Code. 125 and 150 psi Units stress relieved.

SPINNER BLADES in all tubes swirl the hot gases against tube surfaces providing longer gas travel and assure maximum heat transfer.

DISENGAGING AREA unbroken to check turbulence. Ample steam space assures dry steam in instant supply at nozzle always.

MANHOLE 11x15" in all boilers and five cleanout handholes for accessibility to waterside.

CORRUGATED FURNACE for extra strength and added heating surface next to the fire. Low pressure units provided with straight furnace tube.

HEAVY GAGE 3" TUBES, expanded in holes trepanned out of solid plate, ends are firmly rolled and beaded.

REAR COMBUSTION CHAMBER is heavily lined with refractory shipped in place, which completes combustion and preserves heat, thereby increasing efficiency.

CONTROL PANEL — All combustion controls are completely assembled, wired and tested at the factory, and fully enclosed in one complete control panel as a protection from dust and damage. All wiring from panel to motors and instruments is installed and tested.

OIL VOLUMETER—The Oil Volumeter is a positive displacement, variable-volume pump, submerged in the oil reservoir; a simple positive mechanism controls length of piston stroke, metering by volume the exact quantity of oil needed for varying loads. No regulating valves or viscosity compensating devices are required.

FORCED DRAFT FAN—This fan is ruggedly built and is easily accessible for inspection. Direct drive construction and low-speed ball bearing motor assures long, trouble-free service. Fan furnishes a regulated, ample supply of combustion air, eliminating need for a high stack.

VENTURI COMBUSTION THROAT — Refractory-lined combustion throat and chamber. Within it the mixing of the atomized oil or gas with air, and the shape of the flame, are accurately controlled. Adjustable vanes control the rate of rotation of the flame, shaping the flame to match requirements of the firetube.

OIL HEATING SYSTEM — A multiple-pass tubular heater with temperature control instruments and necessary valves. This integral system automatically keeps heavy oil at the correct temperature and viscosity needed for the most efficient combustion.

STURDY STEEL SKIDS simplifies handling and installation problems. Requires no special base construction.

Units for high pressure steam incorporate dry back design, split rear cover plate heavily insulated with access opening to fusible plug in top half. Low-pressure units, steam and water, designed with water back top.

KEWANEE-IRON FIREMAN

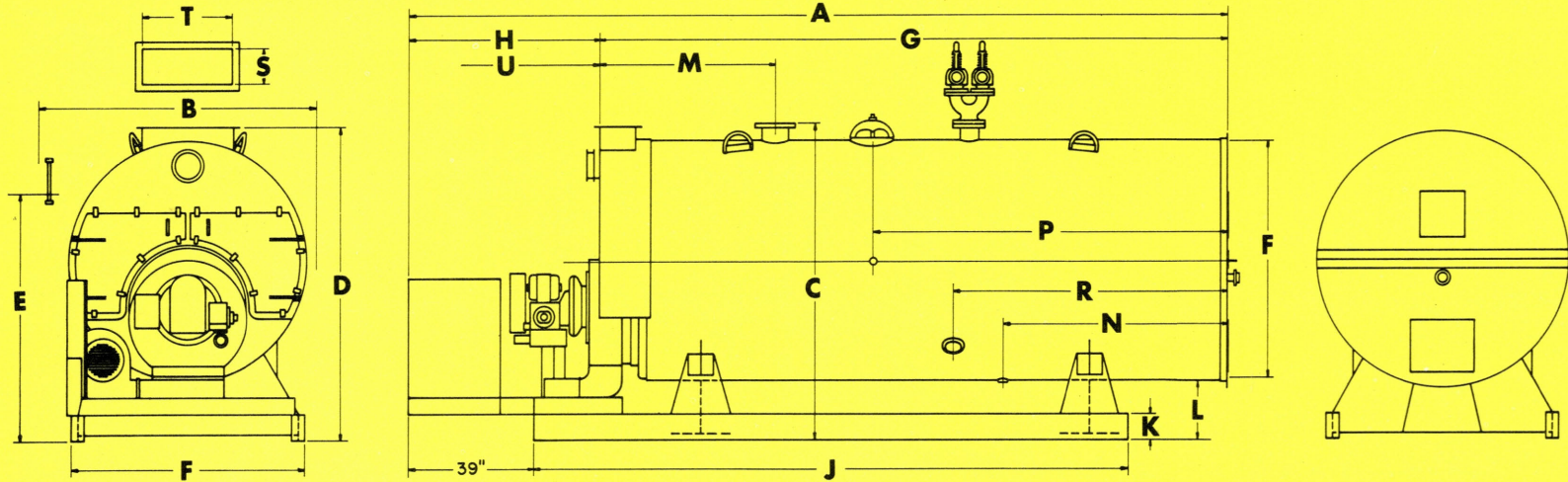
Boiler-Burner Unit

125 & 150 swp



A.S.M.E. code construction for 125 and 150 psi steam hydrostatic tested to 1½ times maximum working pressure. 15 psi and 30 lb water hydrostatic test at 60 lb. Shop inspected and stamped by well-known independent insurance company.

KEWANEE - IRON FIREMAN BOILER - BURNER UNIT



RATINGS, DATA AND DIMENSIONS

Note: When selecting Boiler-Burner Unit sizes, specify (a) Unit Number, (b) Type (steam or hot water), (c) Operating Pressure, (d) Burner Catalog Number, (e) Gas Type and Pressure, (f) Boiler Feed Unit No. for high pressure units (optional).

Unit Number	78-25†	79-25†	80-25	81-25	82-35	83-35	84-50	85-60	86-60	87-76	88-100	89-125	90-125
SBI Rating — Horsepower.....	39	44	52	61	74	87	109	130	152	174	217	261	304
Steam per Hour—212°F..... lb	1350	1500	1800	2100	2560	3010	3750	4510	5260	6010	7510	9010	10510
Btu per Hour.....1000's	1313	1459	1750	2040	2479	2916	3643	4373	5100	5830	7286	8743	10200
EDR Steam.....sq ft	5470	6080	7290	8500	10330	12150	15180	18220	21250	24290	30360	36430	42500
EDR Water.....sq ft	8750	9720	11660	13600	16520	19440	24280	29150	34000	38860	48570	58280	68000
Certified Output Rating.....hp	59	66	78	92	111	131	164	195	228	261	326	392	456
Firing Rate—Oil gph*	18	20	24	28	34	40	50	60	70	80	100	120	140
Gas Btu/hr.....1000's	2460	2740	3280	3830	4650	5460	6840	8200	9560	10920	13670	16400	19120
A—Length Overall.....	15'-6"	16'-4"	16'-1 1/2"	17'-4"	17'-7 1/2"	19'-3 1/2"	20'-9"	21'-2 1/2"	23'-2 1/2"	22'-3 1/2"	24'-10"	25'-10"	25'-10"
B—Width Overall.....	5'-8"	5'-8"	6'-2"	6'-2"	6'-8"	6'-8"	7'-4"	7'-10"	8'-4"	8'-10"	9'-6"	10'-0"	10'-0"
C—Steam Outlet Height.....	6'-5 1/2"	6'-5 1/2"	7'-0"	7'-0"	7'-6 1/2"	7'-6 1/2"	8'-0 1/2"	8'-6 1/2"	9'-0 1/2"	9'-7 1/2"	10'-4 1/2"	10'-10 1/2"	10'-10 1/2"
D—Smoke Outlet Height.....	6'-4 1/2"	6'-4 1/2"	6'-11"	6'-11"	7'-5"	7'-5"	8'-5"	8'-5"	8'-11"	9'-5 1/2"	10'-2 1/2"	10'-8 1/2"	10'-8 1/2"
E—Water Line Height.....	5'-2"	5'-2"	5'-8"	5'-8"	5'-11 1/2"	5'-11 1/2"	6'-3 1/2"	6'-7 1/2"	6'-7 1/2"	6'-11 1/2"	7'-5"	8'-0 1/2"	8'-6"
F—Boiler Diameter—Base Width.....	4'-6"	4'-6"	5'-0"	5'-0"	5'-6"	5'-6"	6'-0"	6'-6"	6'-6"	7'-0"	7'-6"	8'-0"	8'-6"
G—Boiler Length.....	11'-0"	11'-10"	11'-5"	12'-7 1/2"	12'-11"	14'-7"	15'-10"	16'-5"	18'-5"	17'-7"	18'-9"	19'-11"	20'-1"
H—Front of Unit to Boiler.....	4'-6"	4'-6"	4'-8 1/2"	4'-8 1/2"	4'-8 1/2"	4'-8 1/2"	4'-9 1/2"	4'-9 1/2"	4'-9 1/2"	4'-8 1/2"	6'-1"	5'-11"	5'-9"
J—Base Length.....	10'-3"	11'-0"	11'-0"	12'-0"	12'-3"	13'-10"	15'-3"	15'-3"	17'-3"	16'-3"	18'-8"	19'-6"	19'-6"
K—Base Height.....	6"	6"	6"	6"	8"	8"	8"	10"	10"	12"	12"	15"	15"
L—Floor to Boiler.....	18"	18"	18"	18"	18"	18"	18"	18"	18"	18"	18"	21"	21"
M—Steam Outlet Location.....	2'-5"	2'-5"	2'-11"	3'-5"	3'-5"	3'-11"	4'-6"	4'-8"	5'-2"	5'-3"	5'-3"	5'-5"	5'-7"
N—Blow-off Location.....	4'-0"	4'-0"	4'-0"	4'-0"	4'-3"	4'-3"	4'-5"	5'-4"	5'-4"	5'-6"	5'-6"	5'-6"	5'-6"
P—Feed Water Inlet Location.....	6'-0"	7'-0"	6'-6"	7'-1"	7'-4"	8'-2"	8'-10"	9'-3"	10'-3"	9'-10"	10'-6"	11'-0"	11'-0"
R—Return Location 15 lb swp.....	4'-4"	4'-4"	4'-4"	4'-4"	4'-8"	4'-9"	5'-3"	5'-8"	6'-2"	6'-3"	6'-5"	6'-7"	6'-7"
S—Smoke Outlet Width.....	10"	10"	10"	10"	10"	11"	13"	13"	13"	14"	14"	16"	18"
T—Smoke Outlet Length.....	16"	16"	20"	20"	2'-4"	2'-4"	2'-8"	2'-8"	2'-8"	3'-2"	3'-2"	3'-4"	3'-4"
U—Tube Replacement Space.....	6'-8"	7'-6"	7'-1"	8'-3 1/2"	8'-5"	10'-1"	11'-0"	10'-10"	12'-10"	11'-9"	12'-9"	13'-7"	13'-5"
Heating Surface.....sq ft	322	358	429	500	608	715	893	1072	1250	1429	1786	2143	2500
Furnace Volume.....cu ft	50.8	54.2	57.9	62.4	79.8	87.5	110.2	141.1	153.7	174.0	217.0	262.9	308.8
Vent Size.....dia	14"	14"	15"	16"	17"	19"	20"	22"	23"	24"	26"	28"	30"
Steam Outlet 15 lb swp**.....	6"	6"	8"	8"	8"	8"	8"	8"	8"	8"	10"	10"	10"
Steam Outlet over 15 lb swp***.....			4"	4"	6"	6"	6"	6"	6"	6"	8"	8"	8"
Blow-off Size.....	1 1/2"	1 1/2"	2"	2"	2"	2"	2"	2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
Return R&L 15 lb swp.....	4"	4"	4"	4"	4"	4"	4"	4"	4"	4"	4"	4"	4"
Outside Surface to Cover.....sq ft	150	160	165	184	207	236	280	311	352	359	412	465	494
Approx. Weight 15 lb swp.....	8500	9300	9750	10150	12900	13700	16900	20100	21300	25300	30700	35100	46000
Approx. Weight 125 lb swp.....			13600	14100	16700	18200	22500	28300	29700	34000	40000	45900	60200
Approx. Weight 150 lb swp.....			13900	14500	17500	19100	23800	29700	31400	35700	42500	48800	63500
Boiler Feed Unit Number.....125 swp			KXF-11	KXF-11	KXF-12	KXF-12	KXG-20	KXG-8	KXH-20	KXH-22	KXJ-20	KXJ-20	KXK-20
GPM—Maximum 195°F.....			10.5	12.6	15.4	18.2	22.4	27.3	32.2	36.4	45.5	54.6	63.0
Pump Number.....			1133	1133	1141	1141	1252	1255	1255	1255	2257	2257	2283
Motor Size.....hp—RPM			3-3450	3-3500	3-3500	3-3500	5-3500	7 1/2-3500	7 1/2-3500	10-3500	10-3500	10-3500	15-3500
Tank Capacity.....gal			100	100	100	100	200	200	250	250	350	350	500
Shipping Weight.....lb			650	650	650	650	850	900	1050	1150	1400	1400	1650
Boiler Feed Unit Number.....150 swp			KXF-11	KXF-21	KXF-22	KXF-22	KXG-20	KXG-21	KXH-21	KXH-21	KXJ-20	KXJ-21	KXK-21
GPM—Maximum 195°F.....			10.5	12.6	15.4	18.2	22.4	27.3	32.2	36.4	45.5	54.6	63.0
Pump Number.....			1133	1251	1252	1252	1252	2255	2255	2255	2257	2279	2282
Motor Size.....hp—RPM			3-3450	5-3500	5-3500	5-3500	5-3500	10-3500	10-3500	10-3500	10-3500	15-3500	20-3500
Tank Capacity.....gal			100	100	100	100	200	200	250	250	350	350	500
Shipping Weight.....lb			650	750	650	650	850	1050	1200	1200	1400	1550	1700

† 78-25 and 79-25 for low pressure only.
* Fuel burning rates based on 136,000 Btu oil.
** 150 lb American Standard Drilling.
*** 300 lb American Standard Drilling.

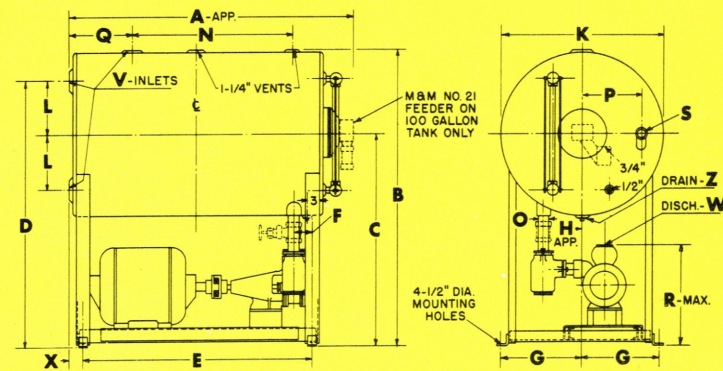
STANDARD EQUIPMENT (125 & 150 lb STEAM) — Safety valve, pump control and low water cut-off, blow-off valve and piping, three try-cocks, gauge glass and guards, gauge glass cocks, steam gauge and cock, injector, piping and fittings for attaching trimmings to boiler. See separate specification sheets for burner equipment.

STANDARD EQUIPMENT (30 lb WATER) — Altitude gauge, thermometer, water temperature control, water relief valve, low water cut-off, piping and fittings for attaching trimmings to boiler. See separate specification sheets for burner equipment.

STANDARD EQUIPMENT (15 lb STEAM) — Steam gauge and cock, low water cut-off, safety valve(s), gauge glass and guards, gauge glass cocks, try cocks, piping and fittings for attaching trimmings to boiler. See separate specification sheets for burner equipment.

BOILER FEED UNITS

Dimensions — Inches



PUMP SIZE	W
1130—1133	1
1143—1148	1 1/4
1251—1253	1 1/4
1255—1259	2
2255—2257	2
2279—2283	2

UNIT	A	B	C	D	E	F	G	H	K	L	N	O	P	Q	R	S	V	X	Z
KXF	46	58 1/4	44	45 1/4	36	4 1/2	14	5	27	10 1/4	28	1 1/2		9	18 1/4		3	3	1 1/4
KXG	66 1/2	78	62	73	56	4 1/2	14 3/8	5 1/2	30	11	48	2	12	9	19 1/4	3/4	4	3 1/4	1 1/2
KXH	66 1/2	78	60	74 1/2	56	4 1/2	17 1/2	7 1/4	36	14 1/2	48	2	15	9	20 1/8	3/4	4	3 1/4	1 1/2
KXJ	66 1/2	78	56	73	56	6	20 1/4	8	42	17	48	2 1/2	15	9	21 1/8	3/4	4	3 1/4	1 1/2
KXK	90 1/2	78	56	73	78	6	20 1/4	8	42	17	72	2 1/2	15	9	18 3/4	1	4	4	1 1/2

OIL BURNERS

— Catalog Numbers

CAPACITY GPH	MANUAL OPERATION WITH NO. 5 OIL	MANUAL OPERATION WITH NO. 6 OIL	FULL-AUTOMATIC OPERATION WITH NO. 5 OIL	FULL-AUTOMATIC OPERATION WITH NO. 6 OIL
25	51503	51513	51523	51533
35	51504	51514	51524	51534
50	51505	51515	51525	51535
60	51506	51516	51526	51536
76	51507	51517	51527	51537
100	51508	51518	51528	51538
125	51509	51519	51529	51539
165	51510	51520	51530	51540

FORCED DRAFT GAS BURNER MODELS

MODEL NUMBER AUTOMATIC START	CATALOG NUMBERS	MODEL NUMBER MANUAL START	CATALOG NUMBERS	NOMINAL INPUT (THOU. BTU PER HR)	STANDARD FAN MOTOR 60 cy-3P-230V
RGFA-25	61500	RGFM-25*	61550	3750	1/2 HP
RGFA-35	61501	RGFM-35*	61551	5250	3/4 HP
RGFA-50*	61502	RGFM-50	61552	7500	1 HP
RGFA-60*	61503	RGFM-60	61553	9000	1 1/2 HP
RGFA-76*	61504	RGFM-76	61554	11250	2 HP
RGFA-100*	61505	RGFM-100	61555	15000	2 HP
RGFA-125*	61506	RGFM-125	61556	18750	3 HP
RGFA-165*	61507	RGFM-165	61557	24750	7 1/2 HP

*Not Standard Models — requires optional controls

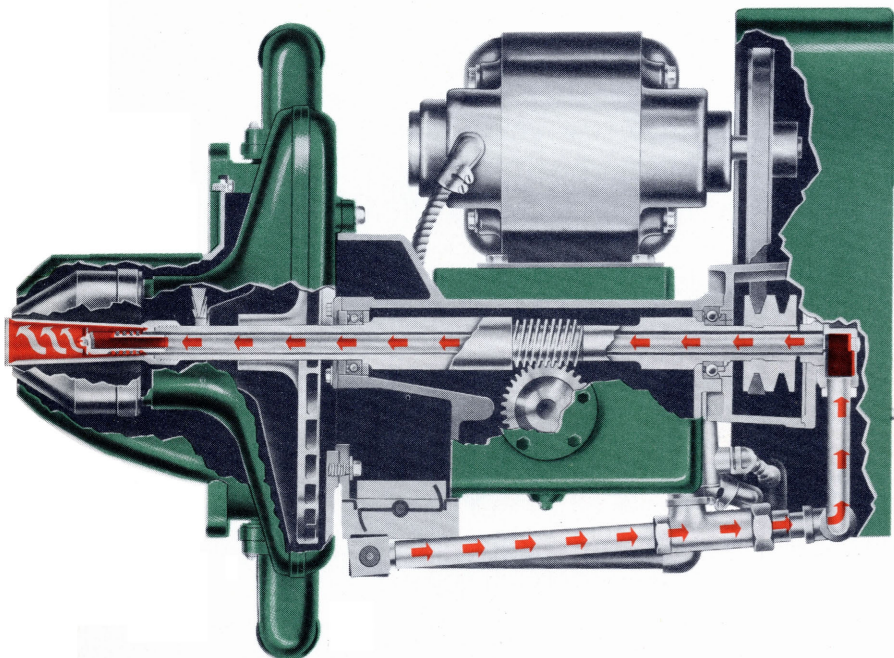
COMBINATION OIL and GAS BURNERS

— Catalog Numbers

OIL CAPACITY GPH	MAXIMUM BTU-GAS INPUT 1000's	MANUAL OPERATION WITH NO. 5 OIL	MANUAL OPERATION WITH NO. 6 OIL	FULL-AUTOMATIC OPERATION WITH NO. 5 OIL	FULL-AUTOMATIC OPERATION WITH NO. 6 OIL
25	3750	61530	61540	61510	61520
35	5250	61531	61541	61511	61521
50	7500	61532	61542	61512	61522
60	9000	61533	61543	61513	61523
76	11250	61534	61544	61514	61524
100	15000	61535	61545	61515	61525
125	18750	61536	61546	61516	61526
165	24750	61537	61547	61517	61527

IRON FIREMAN

Horizontal Rotary Oil Burner



THE IRON FIREMAN OIL VOLUMETER PROVIDES STEADY, UNIFORM OIL FLOW With Any Grade Of Oil

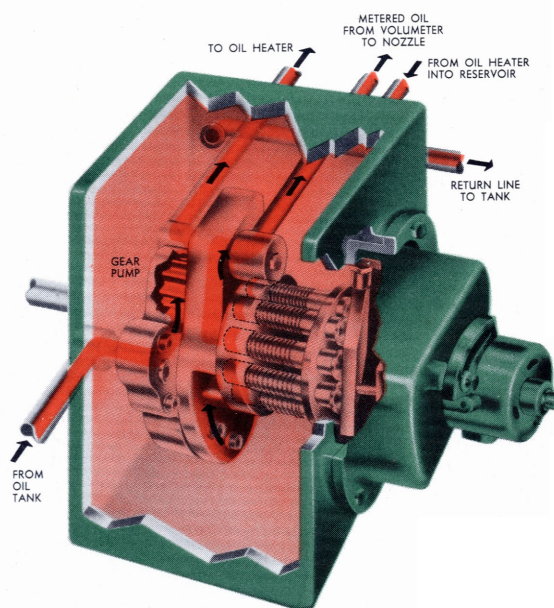
The Oil Volumeter provides precise control of the fuel-feed rate, independent of oil temperature and fluidity. Oil is metered to the burner head — not by changing the size of the hole through which it flows or by varying the pressure — but by a simple, ingenious low pressure pump. A multi-piston cylinder block revolves slowly in the oil reservoir, metering the oil *by volume* smoothly and automatically. The fuel-feed rate is determined by the length of the piston stroke, and is not affected by any other factor. No special adjustment is necessary for firing *any* grade of oil from No. 2 to No. 6. Mixed oils, crankcase oils and other types of refuse oils are fired satisfactorily by many users of the Iron Fireman rotary oil burner.

DUAL PUMP AND RESERVOIR

The large oil reservoir, mounted directly on the burner, is an important part of the Iron Fireman oil control system. A full reservoir is maintained by a gear-type pump which has sufficient capacity to provide return oil flow to the tank. The Oil Volumeter is completely submerged in the oil reservoir and therefore has an ample head of oil at all times, properly conditioned for a quick start. Where the heavier oils are used, the fuel is kept in a fluid state during shut-down periods by a low density electric heater. The reservoir also eliminates two causes of erratic firing: 1. Entrained air in suction line rises to top of reservoir and is vented through the return line. 2. Water condensate in the oil is completely emulsified by the rotation of the Oil Volumeter. Flame cannot be interrupted by a concentration of water reaching the nozzle.

A DIFFERENT AND BETTER WAY TO FIRE HEAVY OIL

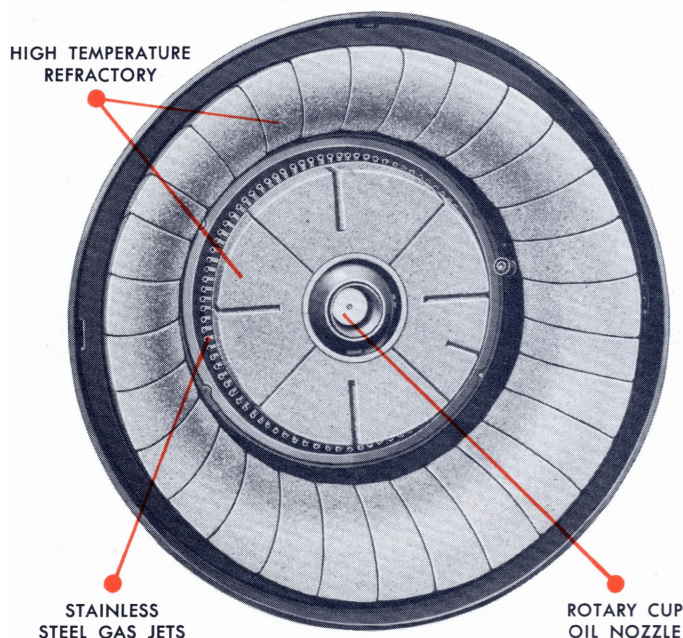
The Iron Fireman Rotary Oil Burner is one of the most advanced burners in its field. It uses a different principle of oil control which enables it to fire the troublesome heavy oils (Nos. 5 and 6) with extreme accuracy and precision, and with a steady, even flame. There is a great advantage in the use of heavy oils, since they average 12% higher in heat value than the lighter grades, and generally cost less per gallon. In the Iron Fireman burner the oil flow is steady and accurate within one half of one percent of setting, regardless of changes in oil viscosity. It is a superbly engineered product which has proved its reliability and economy in thousands of installations.



PRECISION UNIFIED CONTROL OF FUEL AND AIR

The rotary cup oil atomizer is surrounded by an air nozzle supplying the primary air, which is necessary not only for combustion, but for controlling the shape of the flame. Secondary air is supplied by the forced draft fan which supplies about 90% of the combustion air. Precise regulation of both primary and secondary air is accomplished through a unified control. This control is also linked with the Oil Volumeter which regulates the oil supply. By synchronizing these precision controls the Iron Fireman burner balances oil and air at the exact point of highest combustion efficiency through the entire firing range. Control combinations can be provided for almost any application of intermittent or modulated firing.

IRON FIREMAN GAS and OIL FIRING

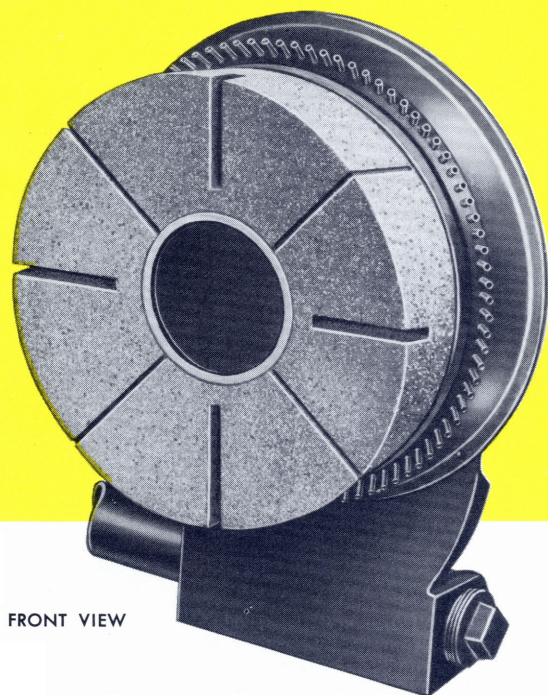


COMBINED GAS AND OIL BURNER

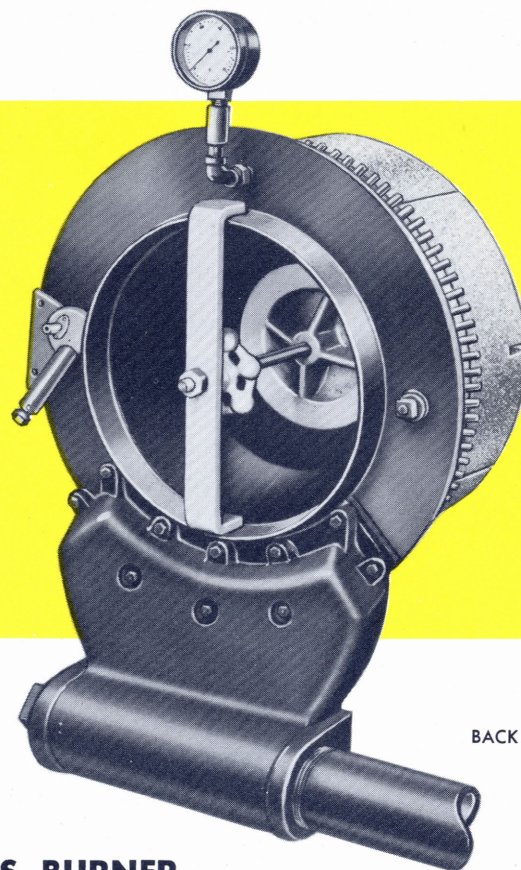
The Iron Fireman Combination Gas and Oil Burner consists of the Iron Fireman Horizontal Rotary Oil Burner and Ring Type Gas Burner combined in a single unit maintaining all of the features of each burner in a single package. The performance of either part of the combination burner remains unchanged regardless of which fuel is being burned at the time.

SWITCH FUELS AT A MOMENTS NOTICE

The change in operation from one fuel to another can be very easily and quickly made at any time. When burning gas, the oil burner swings out of position on its hinge post and a small refractory plug is inserted in its place. When firing oil, the gas burner is not disturbed. The controls are changed from one fuel to the other by the flip of a switch.



FRONT VIEW



BACK VIEW

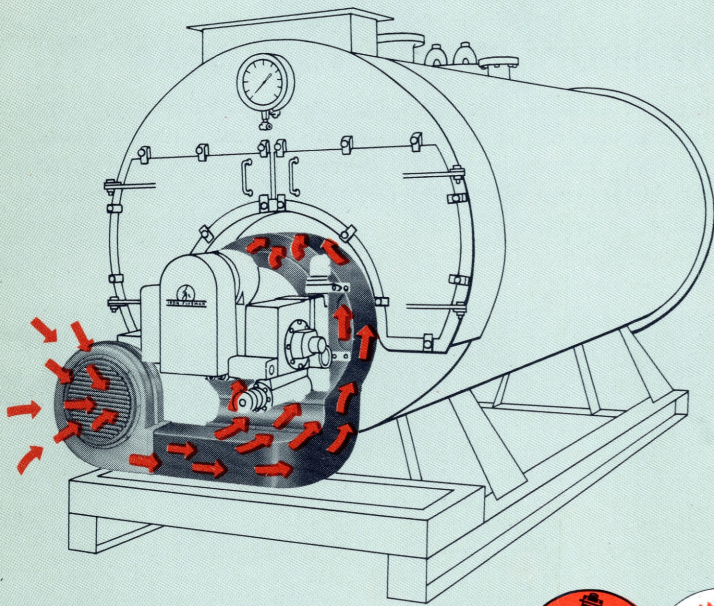
RING TYPE GAS BURNER

This is a highly efficient type of burner which is most effective for firing the Scotch type boiler. Multi-jet construction gives intimate mixing of gas and air in burner throat ahead of the combustion zone. Annular type inlet volume control system, combined with air control vanes at throat entrance, provides positive regulation of air volume, distribution, and rate of flame rotation. Refractory throat provides high temperature combustion chamber for very high combustion efficiency. Ro-

tating, soft, clean cylindrical flame gives unusually high heat transfer by radiation and conduction into primary heating surface, providing low stack temperatures even at high operating rates.

Suitable for operation with either low pressure or high pressure gas by means of proper port sizes. Has extremely wide turn-down ratio from high fire to low fire, and operates with high combustion efficiency at all rates.

... WITH BUILT IN FORCED DRAFT



ELIMINATES THE USE OF HIGH STACKS

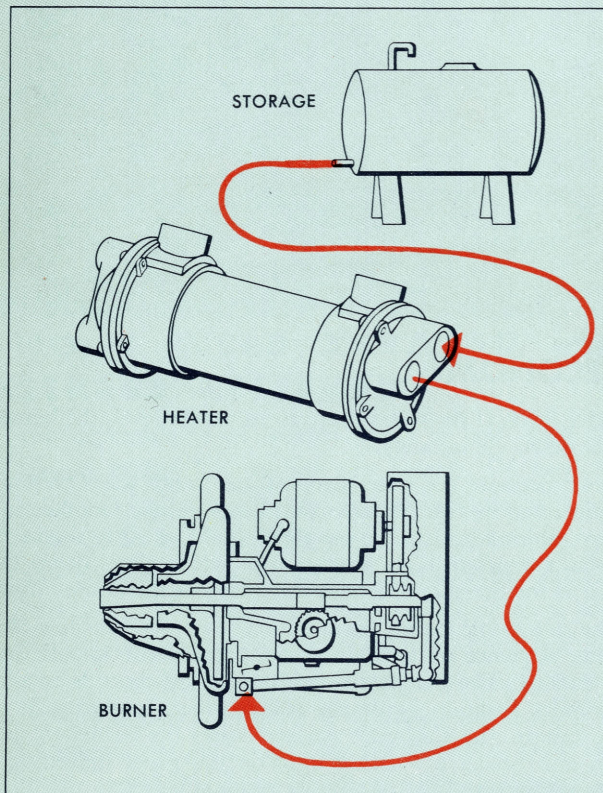
The only flue connection required for this unit is a vent pipe to convey the spent products of combustion outside the building. This important feature eliminates a major expense item in the construction of new plants and additions to existing boiler rooms.

The integral forced draft blower furnishes a regulated supply of combustion air to the burner with sufficient pressure to force it through the boiler passages at all ratings. The proper ratio of air to fuel is maintained by the automatic control system which continuously meters the secondary air volume at the inlet to the burner throat. This superior type of air control not only gives very precise control of the air volume but also assures uniform distribution of the air around the firing tube and controls the rotation of the flame; a condition which is essential for maximum combustion efficiency.

The blower is especially designed for forced draft use, is ruggedly built and easily accessible for service. The direct drive construction and low speed ball-bearing motor drive assure years of trouble free service.

This efficient fan in combination with smooth flue gas and air passages of adequate proportions provides adequate reserve capacity with a minimum of power consumption.

HIGHLY EFFICIENT OIL PRE-HEATING SYSTEM FOR HEAVY FUEL OILS



A completely equipped, fully automatic fuel oil heating system assures peak burner performance. Oil is kept at just the right temperature for proper atomization.

An oil heater, complete with temperature controls, valves, strainers and gauges, is factory assembled on all heavy oil units.

for Steam Boilers

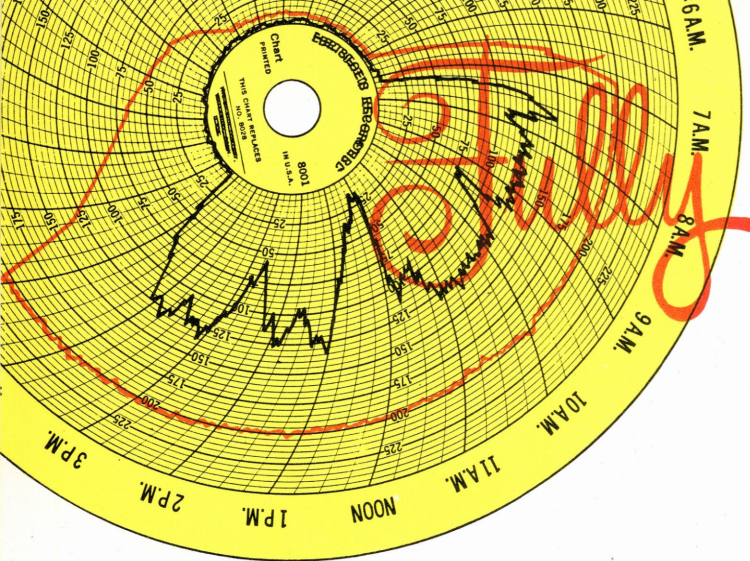
Steam type heaters are regulated by a sensitive, bulb type throttling control, which admits just the right amount of steam to the heater to maintain the desired oil temperature.

for Hot Water Boilers

Hot water type heat exchangers are equipped with oil temperature controls which operate a hot water circulating pump to maintain the required oil temperature.

All piping is fabricated and tested at the factory, assuring minimum pressure drop and freedom from leakage.

In addition, each heavy oil burner is equipped with a thermostatically controlled electric heater in the oil line to the atomizing cup. This auxiliary heater assures that the oil reaches the cup at the proper temperature, even if the line heater has not been in operation long enough to thoroughly heat the oil. The thermostat also momentarily prevents the burner from operating until the oil has reached the proper temperature.



AUTOMATIC CONTROL

FLEXIBILITY TO SUIT YOUR LOAD

Modulating type automatic controls follow the load closely, supplying just the right amount of fuel and combustion air to maintain the steam pressure or water temperature. Safety controls shut down the burner immediately in the event of low water in the boiler, excessive pressure or temperature, or unsafe combustion.

POSITIVE ACTING CONTROLS, PRE-WIRED IN STURDY STEEL PANEL

Magnetic starter switches with overload current protection start and stop all motors in response to control demands. Starters are provided for: **1** Burner Motor; **2** Forced Draft Fan Motor; **3** Feed Water Pump (optional); **4** Auxiliary Oil Circulating Pump (optional)

5 Automatic Electronic Combustion Control shuts down burner instantly in event of flame failure — includes cycling controls for starting combustion equipment in proper sequence.

6 Modulating pressure or temperature master control operates positioning type motor operator mounted on burner.

7 High Limit Control stops burner in event of excessive pressure or temperature.

8 Draft Gauge indicates pressure existing within the boiler.

9 Automatic Draft Control (optional) used on boilers connected to stack high enough to create draft at boiler outlet. Not needed with "stub stack" unless atmospheric pressure varies in boiler room.

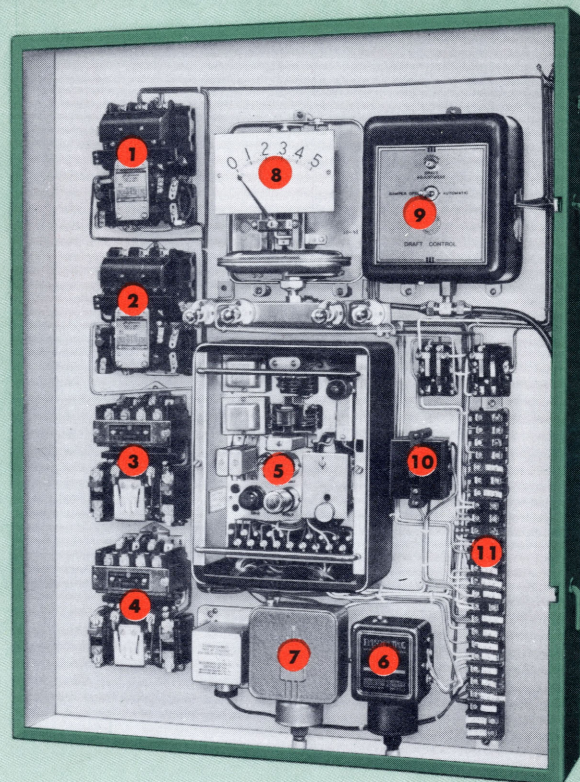
10 Gas-Oil transfer switch — used on dual fuel burners.

11 Control wire terminal block — factory wired to panel instruments and to burner components.

12 Door Gasket — resilient rubber seal.

13 Panel Door — heavy hinged type with self-locking latch. Protects controls and wiring from damage.

14 Control Circuit Voltmeter — gives constant indication of electronic control circuit. Provides check on condition of vacuum tubes.



SAFETY . . . PLUS ECONOMY

The automatic control center is a silent automatic attendant, constantly on the job and always alert to any possible change in boiler load or abnormal operating conditions.

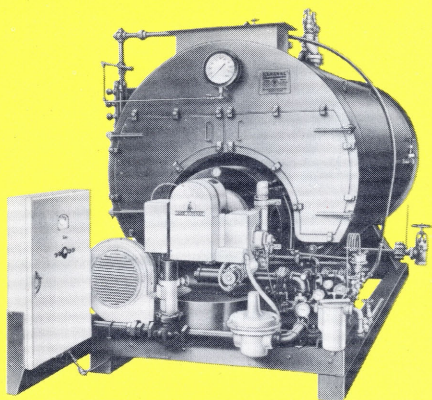
This guardian of safety and economy which sees and feels every change through its electronic scanner and electrical pressure, temperature and water level detectors, directs all operations automatically with super-human accuracy and unfailing dependability. In the event of failure of some part of the system, it shuts itself down and signals an alarm showing the location of the difficulty.

Every provision is made for the ultimate in safety. Safe water levels in the boiler are assured by the automatic pump control which adds water as needed to maintain the most

effective level. If the water drops to an unsafe level, the burner is shut down immediately.

Steam pressure (or water temperature on hot water boilers) is maintained by two separate controls; the master modulating control which regulates the supply of fuel and air to the burner, plus a separate high limit control which shuts down the burner if the pressure or temperature exceeds the desired limit.

The electronic safety combustion controls schedule the starting sequence of the burner components for smooth and safe starting. The burner can not start unless there is an adequate pilot flame to ignite the main burner. In the event of flame failure, the electronic scanner causes the burner to shut down and flashes a warning light on the panel indicating a safety shutdown.



THOROUGHLY ENGINEERED

in every detail

PUMP AND RECEIVER for steam boilers

If specified, a Boiler Feed Unit is included in the complete shipment. This equipment is not attached to the boiler skids, allowing installation at the most convenient location in the boiler room. 14 sizes for units of 52 to 304 hp . . . 125 and 150 lb steam working pressures.

SIMPLEX or DUPLEX UNITS

The Simplex Unit is illustrated. Duplex Unit consists of two pumps and two motors mounted on a single chassis with the tank. Duplex Units are often advisable for stand-by purposes or with a battery of two boilers; each boiler supplied by a separate pump.

EASY TO CLEAN and INSPECT

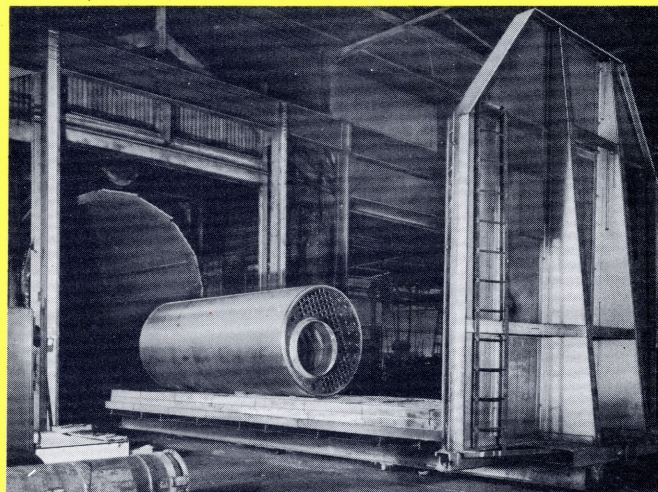
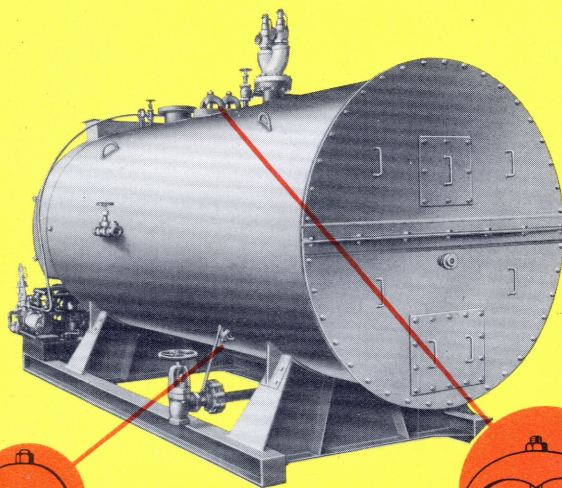
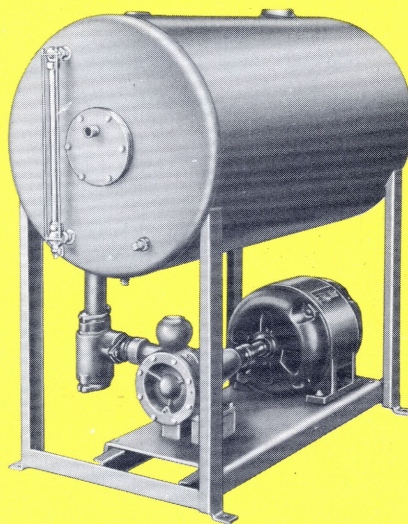
Easy access to fire tubes through hinged doors on front smoke box. Entire back cover plate constructed in two parts can be removed for access to rear chamber. Rear chamber can be cleaned through clean-out door without removing cover plate.

ACCESSIBLE WATER SURFACES

A manhole on the top of the boiler and five handholes provide ready access to the waterways. Fire tubes are spaced well apart for free circulation of water and more accessible water surfaces.

NO. 1 WELD X-RAYED and STRESS RELIEVED

The dependability of welded joints in both high and low pressure boilers has reached new heights. On high pressure boilers a high voltage X-Ray machine radiographs those welds that will be under the full operating load to detect possible blow holes due to gas pockets, faulty fusion and various other defects. Test specimens are stressed to destruction to be certain that the strength and ductility of all joints meets specifications. And in a modern Stress Normalizing Furnace, Kewanee High Pressure Boilers are heated to a temperature of 1200°F. then allowed to cool gradually. Thus fusion welded joints are thoroughly annealed and any locked up stresses relieved.



IT is well said that the most important thing about any product is the name of the maker. And back of the Kewanee-Iron Fireman Boiler-Burner Unit are two great names . . . two great companies which have devoted all their years to the design and manufacture of hot water and steam producing equipment.

With branches and distributors located over all of the 48 states, in every large metropolitan center and in smaller cities as well . . . some 633 in all . . . one can expect and will get a nation wide service that is unmatched in the entire field of such equipment.

*Two Great
Names
behind the product*



IRON FIREMAN



KEWANE

NATIONWIDE SERVICE

